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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,177	03/11/2002	Harald Martin	P21938	4569
7055	7590	12/17/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			BHAT, NINA NMN	
			ART UNIT	PAPER NUMBER
			1764	
DATE MAILED: 12/17/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/030,177	Applicant(s) MARTIN ET AL.	
	Examiner N. Bhat	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. During a telephone conversation with Mr. Turk on December 1, 2004, applicant's attorney indicated that he was preparing a response to the non-final office action but realized that the examiner did not consider claims 17-32 and asked about the status. Due to the IFW scanning process and the fact that the 903 was not broken up into specification, claims, abstract etc., the examiner did not realize there were 32 claims only the preliminary amendment was scanned and identified as claims at the time of the first office action which only included claims 1-16. Applicant requested that a new statutory period be issued along with a new office action with action on all the claims accordingly; all 32 claims have been examined. Action on the merits of claims 1-32 follows:

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 15-22 and 29-32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rotter USP 4,123,332.

Rotter teaches a device for removing recoverable water products and non-recoverable water products which comprises a tubular container with a feed opening for the recoverable non-recoverable waste products. Specifically, the apparatus of Rotter as shown in figures 1 and 2 provide a pyrolysis reaction system which includes an elongated pyrolysis reaction vessel (11) of cylindrical configuration defining a pyrolysis

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reaction zone. Surrounding the reaction vessel is a jacket or vessel (13) which extends co-extensively along a major portion of the elongated reaction vessel. The reaction vessel (11) and jacket (13) are constructed of high temperature nickel/steel alloy materials and could be made of other suitable materials capable of withstanding pyrolysis temperatures. [Note Column 4, lines 45-68]. Extending axially through the pyrolysis reaction zone is a rotatable shaft mounted for rotation the end walls of reaction vessel (11). The shaft (24) is further provided with impellers (24) to move the material through the vessel. Further provided is at least one burner for pyrolyzing the waste. There is provided a screw for conveying the waste tires to the reactor, a burner located in the front area, the shaft is tubular in form, and transport of material on the shaft which include paddles and or impellers upon rotation of the shaft (24) which cooperates and acts to convey material entering the reaction zone through inlet (15) and to continuously agitate the material within the reactor. Also discussed by Rotter is providing a reaction vessel (11) and enclosed reaction zone (12) which are heated by combustion of fuel within the annular heating zone (14). An ignition mechanism which is not shown is provided within the heating zone (14) adjacent the starter burner (36) for initiation of combustion of the air-fuel mixture. Further discussed is providing venting and pressure releasing means within the reaction zone. [Note column 6, lines 22-68]. There is further included means to input air into the reaction vessel thus clearly anticipating applicant's apparatus (device) as claimed.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-14 and 23-28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Rotter. USP 4,123,332

Rotter teaches the invention substantially as claimed for reason delineated above and the following:

As stated above, the device or apparatus of Rotter clearly anticipates applicant's device claims, i.e., the apparatus is capable of functioning in the same manner as claimed by applicant because the means are the same. Specifically, the pyrolysis process takes waste materials such as solid carbonize material such as municipal waters, scrap tires, wood waste from paper making industry, coal by charging to the reaction system in a comminuted form effected by comminuting, crushing, shredding, chopping, pulverizing or particulating which is conveyed to the reaction vessel by rotary auger and gravity feeding, the feed material is introduced into the reaction vessel, and is conveyed through a packed column into the reaction vessel by the plurality of paddle impellers circumferentially disposed about the rotating shaft.[Note Column 8, lines 14-

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68] The solid material is heated to pyrolyzing temperatures in the range of 400°C to 900°C with burners, the heated material passes through the reaction vessel, pyrolysis gas is withdrawn from the reaction vessel, and the gas is recycled and can be used to as fuel source and can be further refined.[Column 9, lines 1-65] Rotter teaches that the feed material undergoing pyrolysis within the reaction zone forms a reaction bed of decreasing thickness from inlet to outlet ends, the effective material throughput volume of the reaction zone is $\frac{1}{2}$ of the actual volume of the zone. The specific pyrolysis temperature conditions within the preferred temperature range established within the reaction zone, via the heat generated in the heating zone dictate the quantity distribution and nature of the fuel gases and liquid hydrocarbon produced during pyrolysis.

However, Rotter does not describe the method in terms of 60-80% of the energy input being carried out on the material in the area of the inflow of material in the first quarter of the container, and the remaining 20-40% of the energy being transferred to the material in the other areas of the container, nor some of the specific design requirements of the device.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a method of removing recoverable waste products and non-recoverable waste products, wherein the recoverable waste produces and non-recoverable waste products are feed into a horizontally fixed container from one side which is continuously transported to the other side of the container with 60%-80% of the energy inputted occurs at the inflow or 1st quarter of the reaction vessel. This concept

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would be inherent if not obvious from reading Rotter and to the ordinary artisan familiar with pyrolysis reactions using waste products streams because, in pyrolysis, the reaction is an endothermic reaction (i.e. requiring energy) in order to paralyze the material to produce hydrocarbon gases which can be separated into gases which can be used directly in combustion, as well as into mineral oil/fuels which can be used subsequently in processes. In pyrolysis as taught by Rotter, it is desirable to rapidly heat the material to a high temperature and then add sufficient additional heat energy to allow and complete chemic decomposition or destructive distillation of the material.[Note Column 8, lines 3-13], as the reaction proceeds through the reaction vessel, the temperature requirements and energy requirements lessen due to the latent heat already generated upon initiation of the pyrolysis reactions thus rendering applicant's method as a whole obvious to the ordinary artisan. With respect to some of the design elements such attachment of the paddles or impellers by key joints and further including equipment which treats the gases after pyrolysis these elements would have been obvious from the teachings of Rotter because as stated above, Rotter teaches basically a system or device for removing recoverable waste products and non-recoverable waste products comprising a tubular container with a feed opening for the waste products and also including a discharge opening for the exhaust gas-solids mixture, a shaft arranged centrally through the container and a device for cracking hydrocarbons and/or a device for the gasification of solids. Specifically Rotter teaches an apparatus and process for treating comminuted solid carbonizable material which is pyrolyzed in a horizontally disposed elongated reaction vessel. Disposed within the reaction vessel is

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a shaft centrally located which includes paddle-like impeller mounted on the shaft which is broad enough to read on applicants keyed joints as the type of mounting of the paddles on the shaft would have been obvious to one having ordinary skill in the art.

The waste is pyrolyzed while being subjected to an indirect heat transfer relationship via a burning air fuel mixture swelling within a heating zone about the reaction zone.

During pyrolysis the material is chemically changed into valuable gaseous, liquid and solid products. Rotter shows in Figure 1 gas-liquid recovery systems, and providing gas storage. The gas-liquid recovery system is not disclosed specifically as a gasifier or cracking apparatus, however, one of ordinary skill in the art would be capable of providing recovery means which would include specifics like a gasifier or cracking apparatus in order to further treat the gases from the pyrolysis of waste thus rendering applicant's invention as a whole obvious absent criticality in showing.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kubiak et al. teach a horizontally disposed fluidized allothermic gasification reactor for coal. Gibson teach an apparatus for pyrolytic decomposition of shredded vehicle tires. Parker et al. teach a high efficiency gasifier which employs a rotary kiln having an indirect fired gasifier and recycle stream. Bishop et al. '792, '044 and '246 teach a method for the gasification of industrial wastes/tires etc. with using a horizontally disposed reactor comprising a rotary shaft, which tumbles the material to be thermally cracked during processing. Sharpe teaches a method of charging pyrolytic gas producing reactor with waste fuel wherein the waste fuel is introduced using a ram

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means to urge the material into the reaction vessel. Kaneko et al. teach waste treatment method and apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



N. Bhat
Primary Examiner
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